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1. Behavioural Genetics
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PSYCHOLOGY TEACHERS UPDATE

Psychology Teachers Update is designed to give a brief overview of the main developments in the different areas of psychology. There is a proliferation of journals and research, and it is very difficult to keep abreast of the latest trends, particularly in the many and varied areas of psychology.

Each issue of Psychology Teachers Update will cover a particular topic, and summarise the main research directions and findings in the last ten to fifteen years approximately. The aim is to give teachers the feel of what is happening in that area of psychology.

Psychology Teachers Update will appear three times a year in January, May, and September. Subscription costs £20 per year for three issues (or £7 each).

Forthcoming topics include practical applications; schizophrenia; consciousness and critical psychology and psychiatry.

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BEHAVIOURAL GENETICS

INTRODUCTION

Historically psychology has been dominated by the nature-nurture debate on behaviour, and some more than others (eg: intelligence). Is this "old dichotomy" (Norrish and Wilson 2005) still there today? The developments in knowledge about genetics (and statistical modelling) has led to a move away from either/or to look at it in a more sophisticated way. "Genes always interact with the environment at some level" (Norrish and Wilson 2005). Even identical twins have differences like fingerprints, and other body tissues.

Karmiloff-Smith (1998) has addressed the complexity of the genotype-phenotype link with Williams Syndrome. This is a developmental disorder, including learning disabilities, due to deletion of certain genes. The exact number of genes varies between individuals, and the actual effect on behaviour, like cognitive development, also varies. This is particularly so where multiple genes are involved, each with a small effect upon development.

BEHAVIOURAL GENETICS

The desire to establish how much certain behaviours, like intelligence or personality, are inherited has existed throughout the history of psychology. The classic methods used are twin and adoption studies. Building on these, Behavioural Genetics (BG) [1] attempts to establish the role of genetics and the environment (both shared and non-shared by family members) on specific traits or behaviours. It is the search for the origins of individual differences in complex behaviours (Pike 1997).

Variations between individuals come from three sources:

- Heritability (G or h^2) - Genetic component of the behaviour. Heritability can occur as two types (Bailey 1998): "narrow sense heritability" (the direct inheritance of characteristics by offspring from biological parents) and "dominance variance" (differences between offspring and parents due to dominant and recessive genes). "Broad sense heritability" is the combination of both these types;

- Shared Environment (SE) - Environmental influences

[1] Also known as Biometrics.

shared by siblings in the same family, including socioeconomic status and parents' childrearing attitudes and behaviour;

- Non-shared or Unshared Environment (NSE) - Environmental influences not shared by the siblings. Here environment is defined very widely to include life experiences as well as the environment in the womb (perinatal factors), disease, and chromosomal abnormalities not inherited. It can also include measurement error (Pike 1997).

Importantly, heritability is the degree to which genes influence differences between group members not the degree to which genes influence an individual's trait or behaviour (Norrish and Wilson 2005).

Heritability estimates only apply to environments in which the data are collected. A particular behaviour or trait may have high heritability in one environment but not another.

Turkheimer et al (2003) found little heritability for the differences in intelligence of children living in poverty, but much higher for those children from rich families. Children living in poverty are going to suffer malnutrition to some degree, and how much during the early years and the time in the womb will greatly affect intellectual development. Thus the greater importance of the environment. Children from rich families are less likely to vary in the amount of food available, and the differences between them in intelligence will be affected more by inheritance.

Heritability also changes across the lifespan. Plomin et al (1997) found, in a longitudinal study, that intelligence in adults was higher in terms of heritability than in childhood. In other words, the intelligence of an adult is closer to that of their parents than the child to their parents. This may be due to "some sort of cascading effect whereby small genetic effects accumulate over time or environmental influences on a phenotype may lessen" (Norrish and Wilson 2005 p224).

The ideal method for studying genetics was "MZ apart" (MZA)(identical, monozygotic, twins raised separately). MZ twins are 100% genetically similar, so, after rearing in separate environments, the similarities between them must be due to genetics. Practically, however, few MZ twins are raised separately, and in different types of environments [2]. For convenience,

[2] The age of separation is one issue, and another is that separated twins are often in regular contact

researchers use the difference in correlations of behaviour between MZ twins reared together (MZT) and DZ twins reared together (DZT). But this has the "equal environments assumption" (Bailey 1998) and tends to ignore the role of the non-shared environment.

BG has been boosted in recent years by the technological development in molecular genetics, which includes the ability to identify specific genes.

BG aims to calculate the elements of genetic and environmental influence through complex statistical analysis [3]. Take an example like height, where, for our purposes, MZ twins are correlated at 0.8 for similarity and DZ twins at 0.4:

- Heritability = 2 x difference between MZ and DZ twins' correlations

  Thus: 2 x (0.8 - 0.4) = 0.8

- Shared Environment = MZ twin correlation minus heritability

  Thus: 0.8 - 0.8 = 0.0

- Non-shared Environment = perfect correlation minus MZ twin correlation

  Thus: 1.0 - 0.8 = 0.2

In the above example, 80% of the difference between siblings in height is due to genetics, and the remainder to NSE.

Studies in BG from the 1980s highlighted the importance of the NSE on differences between siblings (Plomin et al 1994) [4]. NSE is more than just differences in life experiences, it also includes the same event in a family, like divorce, and how each sibling experiences it differently. Another NSE factor of interest is differential parental treatment.

Rowe (1994) pointed out that if parents treat individual offspring differently, the direction of causation is uncertain. For example, the child's

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(Thomas 2002).

[3] For example in linkage analysis, a technique called Lod score method (Log Odds) is used, which calculates the probability of a gene being inherited that is linked as opposed to unlinked at a particular gene position (loci) when genes recombined during inheritance (Tamarin 1999).

[4] Harris (1997) took the role of NSE further in placing the emphasis upon peer group as more important as a environmental influence of children than parents.

temperament or behaviour may influence the parents' treatment of them.

Is the NSE between siblings mainly due to differential parental treatment of each sibling or twin? One project suggests that it is more complex than that.

Disentangling genetics and the NSE was the aim of the Nonshared Environment and Adolescence Development (NEAD) project (Reiss et al 1984). It involved 719 US two-parent families (married longer than five years) with a pair of adolescent siblings (with an age difference of no greater than four years) resident in the household.

The families were divided into six categories (Pike 1997):

- Non-divorced families with MZ twins (100% shared genes)(n = 93);
- Non-divorced families with DZ twins (50% shared genes)(n = 98)(12 pairs of twins were not classifiable and removed from the analysis);
- Non-divorced families with siblings (50% shared genes)(n = 95);
- Stepfamilies with biological siblings (50% shared genes)(n = 182);
- Stepfamilies with half-siblings (25% shared genes)(n = 109);
- Stepfamilies with biologically unrelated adolescents (0% shared genes)(n = 130).

Detailed questionnaires [5] concentrated upon the relationship between maternal and paternal negativity and depression and anti-social behaviour, as well as analysis of ten minute videotaped family interactions. Table 1 summarises the components calculated for the behaviours.

	G	SE	NSE
Maternal negativity and:			
Depression	71	16	13
Anti-social behaviour	66	26	8
Paternal negativity and:			
Depression	56	34	10
Anti-social behaviour	58	30	12

(After Pike 1997)

Table 1 - Calculated (%) genetic and environmental influences on behaviours in NEAD project.

Take the example of maternal negativity and depression. The relationship between how the mother

[5] Measures of Parental Negativity; eg: "yelled at you about something you did wrong" or "How often does this person get into disagreements or fights with you?" (Pike et al 1996).

treats the child (in terms of negative behaviour towards them) and adolescent showing depressive symptoms. The vast majority of the differences between siblings is due to genetics (71%). What does this mean?

"These genetic findings.. suggest that the association is largely not driven by the behaviour of the parents. Instead, it is the children's genes that are reflected in both the parent's behaviour and in the adolescent adjustment" (Pike 1997 p52).

In other words, common genes in the mother and the child produce an interaction between the two individuals which manifests itself as maternal negativity, then sibling negativity, and, in time, adolescent depression (which is also partly influenced by genes):

> That is, children may inherit environments along with genes from their parents (passive), parents or others may react to genetically influenced characteristics of the child (reactive), or children may seek out their own environmental niche suited to their genetic make-up (active) (Pike et al 1996 p601).

Research like this uses statistical modelling and complex statistical analysis to calculate the proportion of genetic and environmental influences on behaviours [6]. These statistical techniques allow a fuller understanding of the complexity of the relationship between genes and environment beyond a simple one-way causation.

The NEAD project also interviewed thirty-two identical twins in detail to isolate perceived differences between the twins (ie: NSE). These included (Pike 1997):

- Parental differential treatment
- Different family expectations for each twin
- Different expectations and experiences with friends
- Different non-family experiences at school and work.

CRITICISMS OF BEHAVIOURAL GENETICS

1. There are criticisms of the statistical computations and particularly the assumptions behind them (eg: Lewontin et al 1984).

2. Technically traits or behaviours are not due to heritability or environment, "rather they reflect the distribution of trait-relevant genes and environments in

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[6] Eg: Multivariate genetic analysis. Univariate genetic analysis calculates the "observed variance on a single measure into genetic and environmental components of variance", while multivariate analysis focuses on the "covariance between traits" (Pike et al 1996).

a specific population at a given time. Change the distribution of genes and environments, and heritabilities and environmentalities will change" (Bailey 1998 p215).

In a highly genetically homogeneous population, individual differences in behaviour are more likely to be due to environmental differences, while in an environmentally similar population, the differences will be due to genetics.

3. Even if heritability is established for a behaviour, there is no direct gene to behaviour (genotype-phenotype) pathway. Genes code for proteins, which do eventually produce behaviours.

For example, divorce was reported as showing heritability (McGue and Lykken 1992), but it is a long way between a relevant gene coding for a protein and the behaviour of filing divorce papers (Bailey 1998).

4. Application of statistical techniques can produce findings which are questionable, if not difficult to explain why or how they are inherited (eg: time spent watching television; Plomin et al 1990).

5. Concern over implications of the emphasis on genetic origins of all behaviour. Ohlson (2002) felt that it was "prompted by people who want to prove that social inequalities are down to our genes, not our culture" (p43).

OTHER KEY DEVELOPMENTS IN GENETIC UNDERSTANDING

The discovery of DNA was announced in "Nature" on 25 April 1953 by James Watson and Francis Crick (with the assistance of Rosalind Franklin). While the "final draft" of the Human Genome Project appeared in April 2003 (Gibbs 2003). A long way in fifty years, but also the realisation of how little is still known. Research into the human genome is taking place all the time. Here are a selection of key findings in recent years which have implications or relevancy for psychology.

Genomic Imprinting

Genomic imprinting is the process by which the same gene can produce a different response depending whether it is inherited from the mother or the father. This only happens for a limited number of genes, it seems (80 of 30

000; Constancia et al 2004) [7]. In 1990 the first imprinted gene was discovered linked to the production of insulin-like growth factor.

The evolutionary origin of such differences can be explained by the parent-offspring conflict (Trivers 1974). "A foetus, although entirely dependent on its mother's nutrients, is not just a passive recipient, but influences its own development and growth. Indeed, it subverts many of the mother's physiological activities to its own end, to ensure adequate mobilization of nutrients and oxygen" (Constancia et al 2004 pp54-55). Paternal copies of genes will demand more resources from the mother, and maternal copies will limit it.

In terms of evolution, the father is only interested in the survival of this offspring (as they can mate with other females), and so it does not matter if the demands of the foetus are detrimental to the mother. But the mother wants other offspring, and so needs to save some resources for later. It is not to her evolutionary benefit to give birth to this child only. In other words, there is a conflict between the father and mother (at a genetic level) over "the desire to make a large, fit baby versus the desire to withhold resources for future offspring" (Constancia et al 2004).

In terms of the role of genomic imprinting on behaviour, knowledge of humans is limited. But research with mice has found that the mother's version of genes aid development of the brain for intelligence and the father's for emotions (Vines 1997). While two disorders - Angelman's syndrome and Prada-Willi syndrome - are caused by imprinting of a genetic fault. If it is inherited from the father, Prada-Willi syndrome develops, but from the mother, Angelman's Syndrome (Pembrey 2005).

Epigenetics

Epigenetics describes another layer of DNA beyond the genes, and that is the biochemistry that triggers genes to switch on or off (Gibbs 2003). What this means is that inheritance is not just about the presence or absence of certain genes (figure 1). In fact, some researchers feel that epigenetics is as important as direct inheritance (Gibbs 2003).

GENE INHERITED	PATERNAL OR MATERNAL	EPIGENETICS	GENE-ENVIRONMENT

[7] More information and latest research at www.geneimprint.com.

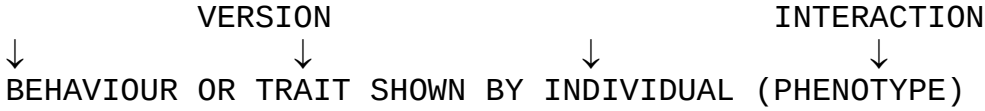

Figure 1 - Complexity of inheritance based on recent research findings in genetics.

One example of epigenetics at work is interesting. Dutch women in WWII, who were starved of food, had smaller babies, but so did their offspring when food was not scarce (Pembrey 2005)(figure 2). It seems that during the pregnancy the mother's body communicated to the foetus that food was scarce, and this led to a smaller baby. But when the child grew up, there was no shortage of food, yet the next generation was still small. The explanation seems to be in terms of epigenetics. Female foetuses acquire the eggs for their future offspring, so the womb environment will affect them. The environment of the grandmother during pregnancy can influence the grandchildren. The exact mechanism of biochemistry is not known at this stage.

Generation 1	MOTHER STARVED OF FOOD
Generation 2	BABY IN WOMB - BORN SMALL
Generation 3	GROW UP AND GIVE BIRTH TO SMALLER CHILDREN IRRELEVANT ON FOOD

Figure 2 - Example of the consequences of epigenetics in the womb.

"Genetic Race"

The increasing knowledge about genes has been applied to classifying humans into "genetic races". These are different to the common use of race based on skin colour or visible physical characteristics. "Genetic race" is based upon common ancestors in evolutionary history.

Tiny mutations in genes, which have limited effects on behaviour, can be used to establish common ancestors. One set of mutations often used are "Alus". "Alus" are short sequences of DNA which appear randomly on different chromosomes. "Therefore, if two people have the same Alu sequence at the same spot in their genome, they must be descended from a common ancestor who gave them that specific segment of DNA" (Bamshad and Olson 2003 p53).

Studies looking at genetics have found that modern views on race and ethnicity (nationality) are social

constructs. For example, Shriver and Kittles (2004) found that one-third of "white" Americans had non-European ancestry in terms of genetics. In fact, there is more genetic variation in individuals in the same country as between different countries (Bamshad and Olson 2003). This is a challenge to the assumption about "race purity" that underlies much racial prejudice and discrimination.

Endophenotype

The desire to see a clear relationship between the gene (genotype) and the visible behaviour or trait (phenotype) is made harder by endophenotypes. These are effects of genes that are not visible to the naked eye. They can be seen as intermediaries between the genotype and the phenotype. For example, one version of a gene leads to a smaller head (visible trait), but the endophenotype produce by the gene is fewer cerebral neurons (which in turn leads to the smaller head).

The genetic basis of endophenotypes is viewed as less complicated than that of the visible trait and the genetic determination is more direct. They are assumed "to have a relatively simple genetic architecture because there are relatively few pathways from gene to phenotype" (Flint and Munafo 2007 p173).

Figure 3 gives an example from psychiatry.

GENE	→	ENDOPHENOTYPE	→	PHENOTYPE
COMT*	→	P300 BRAINWAVE DIFFERENCES**	→	COGNITIVE DIFFERENCES IN SCHIZOPHRENIA***

* Codes catechol O-methyltransferase enzyme which inactivates catechols (eg: dopamine in prefrontal cortex) at post-synaptic sites. Specifically it codes for Valine (Val) or Methionine (Met) at position 158/108 on the genome (Flynn and Munafo 2007).

** Measured by EEG around 300 milliseconds after participants respond to a random auditory or visual stimulus.

*** Eg: selective attention, working memory.

Figure 3 - Example of an endophenotype in schizophrenia.

Flint and Munafo (2007) categorised six groups of endophenotypes: anatomical, developmental, electrophysiological, metabolic, sensory, and psychological/cognitive.

Genetic Manipulation of Animals

Increasing knowledge of genetics has led to and been

aided by research on animals. This type of research directly manipulates genes to see the effect. Two main methods are used:

i) "Knockout" studies - These are those animals with specific genes "turned off" in order to see the effect. The gene has been inactivated by replacing it with an artificial piece of DNA. The observed effect is then used to understand the normal role of the gene. Breeding programmes then produce more animals with that gene turned off.

For example, "knockout" mice are made by taking embryonic stem cells from a four day old embryo. An artificial piece of DNA is inserted into the cells in a process called gene targeting or homologous recombination, and then the cells are injected back into the embryo (National Human Genome Research Institute 2007).

ii) Transgenic studies - These involve the introduction of cloned human genes into non-human animals, like mice, to see the effect.

INTELLIGENCE

In the classic critique of intelligence and inheritance, "The Mismeasure of Man", Gould (1981) argued that there was no evidence for "intelligence as a unitary, rankable, genetically based, and minimally altered thing in the head". That statement was written over a quarter of a century ago, and a lot has happened since then. The debate over the genetic basis of intelligence has seen a number of changes.

The first change relates to the definition of intelligence. The official intelligence task force of the American Psychological Association created this definition: "Individual differ from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought". It continues that "a given person's intellectual performance will vary on different occasions in different domains, as judged by different criteria" (Neisser et al 1996).

The idea of intelligence varying on different domains is not necessarily new, but that it might vary on different occasions is. Meanwhile Cattell's (1971) distinction between fluid intelligence (Gf)(reasoning and novel problem-solving) and crystallised intelligence (Gc)(learned skills and knowledge) has grown in popularity (Gray and Thompson 2004).

Neuroimaging, and studies of brain injured patients has aided the search for where intelligence is housed in the brain. For example, Duncan et al (1995) proposed that frontal lobes are more involved in Gf than posterior lobes based on brain injury studies. They compared three small groups of individuals on the Culture-Fair IQ Scale (test of Gf) and the Weschler Adult Intelligence Scale (WAIS)(measure of Gc). The total score on the latter was taken away from the score on the former. Thus a minus sign meant a lower score on the Gf test. The three patients with frontal lobe damage had scores between -20 and -40 compared to the three controls (range: +5 to +25) and the five patients with posterior lobe damage (range: -10 to +30)(Gray and Thompson 2004).

Initially magnetic resonance imaging (MRI) studies found a simple correlation between brain size and intelligence, but this correlation was never higher than 0.50 (Gray and Thompson 2004). A better indicator is volume of frontal lobe grey matter, and this is determined by genetic factors (Thompson et al 2001).

"Intelligence therefore depends, to some extent, on structural differences in the brain that are under genetic control, indicating a partly neuroanatomical (structural) explanation for the high heritability of intelligence" (Gray and Thompson 2004 p473). But the volume of grey matter in the brain can also be increased by learning difficult perceptual-motor skills (eg: juggling and visual attention areas of the brain; Draganski et al 2004).

Collecting MRI scans of the brains of 258 Dutch twins and siblings finds that 85% of overall brain volume differences is inherited (Posthuma et al 2002). Not surprisingly, the structure of the brains of MZ twins is more similar than between DZ twins.

As to whether intelligence is a single thing (g) or multiple things is not aided by neuroimaging studies which show contradictory results. Duncan et al (2000) performed PET scans on participants doing three different intelligence tasks and found activity in one brain region (which supports g). A direct replication (Prabhakaran et al 1997) found activity in many brain regions (which supports multiple intelligences). To some degree this question has been superseded because cognitive neuroscience has highlighted networks of brain areas (functional units) involved in cognitive processes (Gray and Thompson 2004).

Another change in recent years towards intelligence is the focus of cognitive neuroscience on physical components of intelligence that can be measured, like speed of neural transmission, and neurochemistry.

Genetic Bases of Intelligence

Genetic influences on intelligence can be studied in a number of ways:

i) The study of genetic polymorphisms (different versions of the same gene).

However, this is easier said than done, and many findings are not replicated (eg: gene on chromosome 6 related to insulin-like growth factor-2 receptor, IGF2R, and high intelligence; Gray and Thompson 2004). The problem is that intelligence is polygenic (determined by a number of genes that interact).

Any naive belief in a single gene for intelligence has been challenged in recent years. There are many genes involved in a small way. Recently, Butcher et al (2008) found six key gene regions relating to intelligence, but they only accounted for 1% of the variation in intelligence between individuals.

This study collected the scores of nearly 8000 seven year-olds from England and Wales (part of the Twins Early Development Study; TEDS) on verbal and non-verbal reasoning tests, and DNA samples. Sophisticated analysis of the DNA isolated six gene regions when comparing the most intelligent and the least intelligent children.

However, Katherine Burdick (Coghlan 2007) in a US study claimed that analysis of the same regions of DNA accounted for 9-10% of variation in intelligence between individuals.

ii) Quantitative genetic techniques like heritability estimates or path analysis.

iii) MZ twin reared apart.

This traditional method of studying genetic differences finds approximately 75% similarity. In other words, the twins have the same IQ in three-quarter of cases irrelevant of separate environments. But this method has always had limitations - adoption of each twin into similar environments, sharing of the foetal environment, and similar treatment for identical than on-identical twins by parents (assimilation effects)(Gray and Thompson 2004).

Bouchard et al (1990), in a study controlling for these limitations, found a correlation of 0.64 for verbal scores on the WIAS among forty-eight sets of identical twins separated in early infancy.

iv) Other evidence.

An interesting observation is that the heritability of intelligence increases with age, which is the opposite to what would be expected by an environmental theory of intelligence (Gray and Thompson 2004). So the IQ score similarity between MZ twins will be greater at 80 ears old than at 20 years old, for example.

However, this is not necessarily conclusive "if individuals' environments become increasingly matched to their genotype preferences" (Gray and Thompson 2004). So, for instance, two identical twins of high intelligence reared separately may both be motivated to read and thus improve their intelligence.

The environment cannot be isolated in real-life studies. It is accepted by modern research on the genetic basis of intelligence that gene-environment interactions are involved both directly (GE) and indirectly (GE corr). The latter can be seen in gifted individuals who create situations (eg: reading for pleasure)(active GE corr) or produce reactions in situations (eg: getting teachers to use more sophisticated language)(reactive GE corr) that further develops their intelligence. "Active and reactive correlations are more difficult to estimate leading to suggestions that the notion of heritability conflicts with common sense" (Gray and Thompson 2004).

Factors in the environment that influence intelligence include:

- Pre-natal environment including maternal drug use or environmental toxins. Devlin et al (1997) felt that this environment accounted for 20% of the correlation of intelligence between identical twins, and 5% for siblings.

- Post-natal environment including length of breast-feeding (2-5 IQ points; Drane and Logemann 2000), family environment (20-25% of IQ population difference; Gray and Thompson 2004), and "the multitude of random events in human life" that individuals do not share with others.

The GE interaction can be seen in a recent study by Turkheimer et al (2003). Studying 320 pairs of twins born in the 1960s, the researchers found that wealth and socioeconomic status played a key role in the heritability of intelligence. Individuals from poor families showed a heritability of intelligence of 0.10, but it was 0.72 for twins from rich backgrounds. Gray and Thompson (2004) see this finding as "a caveat against general inferences based on heritability data".

REFERENCES

Bailey, J.M (1998) Can behaviour genetics contribute to evolutionary behavioural science? In Crawford, C & Krebs, D.L (eds) Handbook of Evolutionary Psychology Mahwah, NJ: Erlbaum

Bamshad, M.J & Olson, S.E (2003) Does race exist? Scientific American December, 50-57

Bouchard, T.J et al (1990) Sources of human psychological differences: The Minnesota study of twins reared apart Science 250, 223-228

Brewer, K (2003) Basic genetics Orsett Briefing Papers for Psychologists 2, 1-7

Butcher, L et al (2008) Genome-wide quantitative trait locus association scan of general cognitive ability using pooled DNA and 500K single nucleotide polymorphism microarrays Genes, Brain and Behaviour (DOI: 10.1111/j.1601.183x.2007.00368x)

Cattell, R.B (1971) Abilities: Their Structure, Growth and Action Boston: Houghton Mifflin

Coghlan, A (2007) "Intelligence genes" keep a low profile New Scientist 1/12, p16

Constancia, M et al (2004) Resourceful imprinting Nature 4/11, 53-57

Craddock, N & Owen, M.J (1996) Modern molecular genetic approaches to psychiatric diseases British Medical Bulletin July, 434-452

Devlin, B et al (1997) The heritability of intelligence Nature 388, 468-471

Draganski, B et al (2004) Changes in grey matter induced by training Nature 247, 311-312

Drane, D.L & Logemann, J.A (2000) A critical evaluation of the evidence on the association between type of infant feeding and cognitive development Paediatric and Perinatal Epidemiology 14, 349-356

Duncan, J et al (1995) Fluid intelligence after frontal lobe lesions Neuropsychologia 33, 261-268

Duncan, J et al (2000) A neural basis for general intelligence Science 289, 457-460

Flint, J & Munafo, M.R (2007) The endophenotype concept in psychiatric genetics Psychological Medicine 37, 163-180

Gibbs, W.W (2003) The unseen genome: Beyond DNA Scientific American December, 79-85

Gould, S.J (1981) The Mismeasure of Man New York: Norton

Gray, J.R & Thompson, P.M (2004) Neurobiology of intelligence: Science and ethics Nature Reviews Neuroscience June, 471-482

Harris, J.R (1997) The Nurture Assumption London: Bloomsbury

Karmiloff-Smith, A (1998) Development itself is the key to understanding developmental disorders Trends in Cognitive Science 2, 389-398

Lewontin, R.C; Rose, S & Kamin, L (1984) Not In Our Genes New York: Pantheon

McGue, M & Lykken, D.T (1992) Genetic influence on risk of divorce Psychological Science 3, 368-373

Morton, N.E (1955) Sequential tests for the detection of linkage American Journal of Human Genetics 7, 277-318

National Human Genome Research Institute (2007) Knockout Mice (Accessed at www.genome.gov on 19/10/07)

Neisser, U et al (1996) Intelligence: Knowns and unknowns American Psychologist 51, 77-101

Norrish, M & Wilson, N (2005) Origins of development. In Oates, J et al (eds) Psychological Development and Early Childhood Milton Keynes: Open University

Ohlson, K (2002) It takes two.. New Scientist 5/10, 41-45

Pembrey, M (2005) speaking on Horizon: The Ghost In Your Genes BBC Television

Pike, A (1997) Developmental behavioural genetics. In Hatcher, D (ed) Proceedings of the 15th ATP Conference Leicester: Association for the Teaching of Psychology

Pike, A et al (1996) Family environment and adolescent depressive symptoms and antisocial behaviour: A multivariate genetic analysis Developmental Psychology

32, 4, 590-603

Plomin, R et al (1990) Individual differences in television viewing in early childhood: Nature as well as nurture Psychological Science 1, 371-377

Plomin, R et al (1994) Behavioural genetic evidence for the importance of nonshared environment. In Hetherington, E.M et al (eds) Separate Social Worlds of Siblings: Impact of Nonshared Environment on Development Hillsdale, NJ: Erlbaum

Plomin, R et al (1997) Nature, nurture and cognitive development from 1 to 16 years: A parent-offspring adoption study Psychological Science 8, 442-447

Posthuma, D et al (2002) The association between brain volume and intelligence is of genetic origin Nature Neuroscience 5, 83-84

Prabhakaran, V et al (1997) Neuronal substrates of fluid reasoning: A functional resonance imaging study of neocortical activation during performance of the Raven's Progressive Matrices Test Cognitive Psychology 33, 43-63

Reiss, D et al (1984) The separate worlds on teenage siblings: An introduction to the study of nonshared environment and adolescent development. In Hetherington, E.M et al (eds) Separate Social Worlds of Siblings: Impact of Nonshared Environment on Development Hillsdale, NJ: Erlbaum

Rowe, D.C (1994) The Limits of family Influence: Genes, Experience and Behaviour New York: Guilford

Shriver, M.D & Kittles, R.A (2004) Genetic ancestry and the search for personalised genetic histories Nature Review Genetics August, 611-618

Tamarin, R.H (1999) Principles of Genetics (6th ed) Boston: WCB McGraw-Hill

Thomas, K (2002) The individual differences approach to personality. In Miell, D et al (eds) Mapping Psychology 1 Milton Keynes: Open University

Thompson, P.M et al (2001) Genetic influences on brain structure Nature Neuroscience 4, 1253-1258

Trivers, R (1974) Parent-offspring conflict American Zoologist 14, 249-264

Turkheimer, E et al (2003) Socioeconomic status modifies heritability of intelligence in young children Psychological Science 14, 623-628

Vines, G (1997) Where did you get your brains? New Scientist 3/5, 34-39

APPENDIX: BASIC GENETICS [8]

The Cell

Each cell in the body contains a complete set of chromosomes. The chromosomes are numbered 1 to 22 in humans based on decreasing size. Chromosomes are spread in two ways.

The first process of cell division is known as mitosis. The new cell contains the exact duplication of pairs of chromosomes as the original.

While in the process of meiosis, the gametes (matured sex cells; ie: sperm or egg) receive half the pair of chromosomes of the parent. Thus during reproduction the pair of chromosomes are reformed from the mother and father's gametes.

However, one chromosome does not follow these rules - the X chromosome. This chromosome can have two forms: XX (which determines a female) or XY (for male).

The chromosome complement is known as a karotype, which for humans is 46: 22 pairs (known as autosomes) the same for either sex and then XX or XY.

On occasions, there can be extra copies of a chromosome (known as trisomy) eg Downs syndrome and trisomy 21 (an extra copy of chromosome 21). Other chromosomal abnormalities include deletions or duplications of part of a chromosome.

Chromosomes

Chromosomes are made up of genes, which are based on DNA (deoxyribonucleic acid). DNA is made up of four bases: adenine (A), guanine (G), cytosine (C), and thymine (T). These are ordered around two chains wrapped together as the double helix.

The nature of DNA is such that A always pairs with T, and C and G. The sequence of bases is the genetic information.

Genetic information is transported within the cell by messenger ribonucleic acid (mRNA). Each molecule of mRNA contains a molecule of DNA (this process is transcription), and mRNA is translated into proteins. The

[8] Taken from Brewer (2003).

proteins are, for example, leucine, glycine, and arginine. These are, simplistically, the building blocks for the physical manifestation of the gene's instructions. More details of these processes are being discovered all the time.

Inheritance

Changes in the sequence of bases leads to changes in cell development. Point mutation is the substitution of one base for another, and is the most obvious example. Others include deletions (loss of sequence of bases), insertions (gaining of a piece of DNA), frameshift mutations (the loss of one base affecting the coding of others), and translocations (the breaking of part of a chromosome and reforming at a different site on a different chromosome) (figure 4). These changes can be advantageous in the evolutionary sense as well as disadvantageous.

NORMAL SEQUENCE	ACCGTTTTA
DELETION	ACCGTTT..
POINT MUTATION	ACCGATTTA
INSERTION	ACCTTGTTG

Figure 4 - Examples of changes in sequence of bases.

Comparison of sequences of DNA or repeated sequences (known as tandem repeats) can be used to compare genetically related individuals, and to pinpoint the genetic basis of behaviour.

Genes produce a phenotype (manifestation of behaviour based on genetic make-up and environment), and are viewed as dominant or recessive. Dominant genes require only one copy from either parent to manifest the behaviour (phenotype), while both copies are needed for recessive genes to show the behaviour. Individuals with one copy of a recessive gene are known as carriers. There are a number of possibilities for the offspring (figures 5 and 6).

Genetic traits can be inherited together over a number of generations because genes are close together on the same chromosome. This is known as linkage disequilibrium. This fact is one that has helped in the modern development of molecular biology.

PARENT A	PARENT B	OFFSPRING
DD	DD	all DD
RR	RR	all RR
DD	RR	all DR ie express D but carry R
DD	DR	all express D but ½ carry R
RR	DR	all carry R but ½ express D
DR	DR	3/4 express D; 1/4 express R; 2/3 carry R

D = dominant gene; R = recessive gene

Figure 5 - Possible relationships of dominant and recessive genes.

PARENT A	PARENT B	OFFSPRING
RR	NN	all RN (carrier)
RN	NN	½ RN; ½ NN (normal)
RN	RN	1/4 RR (affected); ½ RN; 1/4 NN
RN	RR	½ RR; ½ RN

R = recessive gene; N = normal gene

Figure 6 - Example of recessive gene and inheritance.

Another important discovery concerns restriction enzymes. These substances are found to cut DNA where specific base sequences occur, and to divide the DNA into "manageable chunks". This is very important in "molecular cloning". The major developments in studying genes are based around better ways of spotting base sequences in such a mass of information.

Studying Genetics

The study of genetics often makes use of "genetic

markers". The term "genetic marker" usually means an inherited characteristic which is stable over time, and thus can be reliably detected across generations. "Classical" markers include blood group, histocompatibility (HLA) antigens, and colour blindness.

There are also "DNA markers" called "restriction fragment length polymorphisms" (RFLP) or restriction enzymes (linked to alterations in the base sequences).

For example, BamHI (a protein of bacterial origin) recognises the following six base pair sequence by cleaving to that sequence:

G G A T C C
C C T A G G

The steps in the process using RFLPs is as follows:

1. Isolate DNAS from blood, for example.

2. Cutting of DNA into manageable chunks with restriction enzymes.

3. Separate double-strand fragments of DNA into single ones (a process known as denaturation).

4. Transfer the fragments of DNA to nylon membrane and prepare for analysis. This last step becomes very technical.

It is possible to use genetic markers to distinguish specific alleles (possible copies). The markers may not be related to the mutation in the DNA, but are known to be close to it. Simply, the aim is to find a variant in the DNA in affected members of a family, but not in unaffected members. It is usually assumed that the marker is close enough to the pathological gene on the same chromosome that separation during meiosis (recombination) is unlikely.

The frequency of recombination is used as a measure of the physical distance separating two loci (positions). A statistical assessment of the likelihood of linkage between two loci is calculated as a lod (log of odds that two loci are linked) score (Morton 1955). A score or 3 or more is accepted as evidence of linkage in Mendelian transmission (ie: single gene involved).

The process of searching for a gene can be random, or using a candidate gene (a suspected gene: eg: dopamine D2 receptor for schizophrenia). The detailed mapping of the Human Genome Project has meant there is less "shooting in the dark". All of the techniques so far are based on searching for a single gene (known as Mendelian

transmission). But, in many cases, there will be multiple genes (polygenic) involved.

Genetic Mechanisms

Most diseases are complex and not linked to single genes. There are a number of genetic mechanisms involved (Craddock and Owen 1996):

i) Epistasis - This is the interaction of multiple genes to produce the illness.

ii) Locus heterogeneity - This is where multiple genes are involved, but any one gene can produce the illness on its own also.

iii) Allelic heterogeneity - There are multiple alleles at a single disease locus. This is a number of possible genes at one particular situation, and a certain combination produces the illness.

iv) Dynamic mutation - Here at a single disease locus, the allele mutates between generations. A particular gene mutates between parents and offspring.

v) Parent of origin effect - The expression of the allele depends upon the parental origin. The gene at a particular locus from the biological father will have a different effect to that from their biological mother.

vi) Mitochondrial gene mutation - The behaviour is linked to the maternal pattern of inheritance as genes in the mitochondria are only inherited from the mother.

PEACE PSYCHOLOGY

INTRODUCTION

This is an applied area of psychology that makes relevant contributions to policymakers concerned with issues of conflict. These include fear, destructive ideologies, and images of the enemy (Cairns and Lewis 2003).

Those interested in Peace Psychology tend to be psychologists who are aware of the realities of violence. For instance, Ed Cairns, who has been active in "inventing" Peace Psychology in the UK, works at the University of Ulster, and many of his studies are linked to the political conflict in Northern Ireland (eg: Cairns et al 1995).

The American Psychological Association (APA) has a Peace Psychology Division [9], but there is no equivalent in the British Psychological Society (BPS) at this stage [10] [11]. The Peace Psychology Division works "to promote peace in the world at large and within nations, communities, and families" (www.apa.org/about/division/div48.html; accessed 17/04/08).

Peace Psychology uses many of the famous studies and areas of study, like aggression and prejudice, but focuses upon what can be learnt to end war and promote peace. Cairns and Lewis (2003) listed three key areas of interest for Peace Psychology:

- Conflict resolution - eg: Kelman's (1997) application of knowledge about group processes to the Arab-Israeli conflict with interactive problem-solving groups among unofficial representatives of the warring parties [12];

- Ending cycles of revenge - eg: the application of the Social Identity Theory to understand group behaviour during apartheid at the Truth and Reconciliation Commission in South Africa [13];

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[9] http://www.webster.edu/peacepsychology/.

[10] In England, Department of Peace Studies at University of Bradford is best known for courses and research on peace generally.

[11] Resources on peace at US Institute of Peace (http://www.usip.org/library/truth.html) and at Social Psychology Network (http://www.socialpsychology.org/peace.htm).

- [12] Kelman described the importance of the small group: "The group is a microcosm of the larger system because,.. the participants share the fundamental concerns, fears, memories, and aspirations of their respective communities. As they interact with each other around the issues in conflict, they reflect their own community's perspectives, priorities, and limits of what is negotiable, not only in what they say but also in how they say it and how they act toward each other" (p216).
- [13] http://www.doj.gov.za/trc/index.html.

- Promoting world peace - eg: the Seville Statement on Violence [14] (Adams 1991) emphasised that there is no scientific evidence that human beings are inherently violent or war-like.

Blumberg et al (2007), in their textbook on Peace Psychology, have chapters on areas including government policy and international relations, peace-making and war, conflict resolution, theories of aggression, non-violence and peace movements, terrorism, and sustainable development.

Peace Psychology has increased in research popularity over recent years. Blumberg (2007) analysed the PsycINFO database for articles related to peace. In the 1970s there were under 400, which increased to over 1300 in the 1980s and 1728 in the 1990s. In 2004 (the last year surveyed) there were 176 articles. Conflict resolution was the most popular topic of Peace Psychology by publication. The number of articles on terrorism has, not surprisingly, multiplied since 2001: 53 in PsycINFO in that year to 215 in 2004.

Peace Psychology is an applied area of psychology which means that its practitioners are involved in "real world" projects, like the Chicago Project for Violence Prevention and CeaseFire [15]. CeaseFire is a project to reduce street and gang violence launched in 2000 in the West Garfield Park neighbourhood of Chicago.

CONFLICT RESOLUTION

Kelman (1997) described it thus:

> Practitioners of conflict resolution work at different levels - ranging from the interpersonal to the international. They operate in different domains, such as the court system, public policy, labour-management relations, interethnic relations, or international diplomacy. They derive their ideas from a variety of sources, such as law, psychotherapy, management theories, group dynamics, peace research, decision theory, the study of conflict resolution in traditional societies, and theoretical models from the entire range of social science disciplines (p213).

The psychology of prejudice and discrimination has been an important topic in the history social psychology. Peace Psychology looks to use the knowledge in order to

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- [14] Full text at http://portal.unesco.org/education/en/ev.php-URL_ID=3247&URL_DO=DO_TOPIC&URL_SECTION=201.html

[15] http://www.ceasefirechicago.org/index.shtml.

reduce prejudice and conflict.

Importantly, it is felt that prejudice is a product of group interaction rather than of the personality (as in early theories like the "Authoritarian Personality"; Adorno et al 1950).

This early explanation of prejudice is aberrationist: "The authoritarian's bigotry, for example, is seen to stem from a perversion of the normal course of self-development, resulting in a maladjusted way of viewing the social world and relating to others" (Dixon 2007 pp148-9).

The emphasis on group interaction as the basis of prejudice came with Muzafer Sherif's work (The Robbers' Cave experiments; Sherif et al 1954) and the Social Identity Theory (Tajfel and Turner 1986). Sherif was able to create conflict between the groups of boys in the study, and then reduce it through co-operation on common goals.

For example, when the water supply "failed" the boys worked together to find the fault on a mile long pipe. The hostility was not immediately dispelled, but slowly it was reduced through acts of co-operation as shown by friendship choices (table 2).

GROUP:	RATTLERS		EAGLES	
	During Conflict	After Co-operation	During Conflict	After Co-operation
Ingroup	93.6	63.6	92.5	76.8
Outgroup	6.4	36.4	7.5	23.3

(After Sherif et al 1954)

Table 2 - Friendship choices (%) during conflict and after co-operation between the groups.

Group identity means that individuals show favouritism towards their own group (ingroup) and negative attitudes and behaviour towards the other group (outgroup). This can be seen in how individuals make sense of the same behaviour by the ingroup and the outgroup. Hunter et al (1991) showed news footage of the "troubles" in Northern Ireland to twenty-six Catholic and twenty-one Protestant Northern Irish residents. The violence by the outgroup was explained through internal attributions (eg: personal qualities like psychopath), but the violence by the ingroup was given an external attribution (eg: situational factors like provocation or retaliation for previous attacks)(table 3).

	INTERNAL ATTRIBUTIONS		EXTERNAL ATTRIBUTIONS	
Violence by:	Catholic	Protestant	Catholic	Protestant
Participants:				
Catholic	17.9	79.2	78.1	20.8
Protestant	71.5	28.5	28.5	71.5

(After Dixon 2007)

Table 3 - Percentages of attributions for violence based on Catholic and Protestant.

Similarly, in the BBC programme "Loyalists: War and Peace" (1999), a former Ulster Volunteer Force (UVF) member, Bobby Morton, justifies the murder of six Catholics as retaliation for the killing of the UVF leader in June 1994.

> Peter Taylor (interviewer)(PT): That was cold-blooded murder, what else is it?
>
> Bobby Morton (BM): I call it retaliation which is not quite the same thing.
>
> PT: But you end up with dead Catholics who are innocent.
>
> BM: In retaliation for dead Protestants who are laying on the Shankhill Road. Yes, I can do it.
>
> PT: But that doesn't justify the death of innocent Catholics, does it?
>
> BM: If you are sending out a message to the IRA that if you kill a Protestant someone is going to pay for this here, now it may be crude; it's vicious, but the end may well justify the means (Brewer 2003 pp26-7).

The social cognition explanations of prejudice can ignore the irrational or emotional aspect of such behaviour and assume that individuals are entirely rational beings only with biased thinking patterns. Billig (2002) argued that in the case of extreme prejudice (like bigotry) there is an emotional investment: "Dehumanizing the other can be enjoyable as the bigot is freed from the constraints of respect, tolerance and reasonableness".

So conflict reduction must deal with both the cognitive and emotional processes of prejudice. Simple contact between different groups may not be enough. Even more sophisticated contact which includes regular contact, free from competition, and equal in status has limitations because the "optimal conditions" noted in experiments are usually not present in the real world of conflicts (Dixon 2007).

Hopkins and Kahani-Hopkins (2006), in an analysis of data from British Muslims (eg: Muslim Parliament of Great Britain), found that contact and integration has to be seen in a historical context. For some individuals, integration was viewed as positive social change, while others saw it as a threat to their religious views and a loss of social identity. Contact between groups, particularly if enforced in any way, could be counter-productive.

Using Psychology in Peace-Building: Hindu-Muslim Conflict in India

The Hindu-Muslim conflict has existed in India since independence in 1947, and from time to time breaks out in violence (eg: over 1000 people killed in February 2002 in Gujarat).

Shankar and Gerstein (2007) investigated the perceptions of such violence among people living in Gujarat state (bordering Pakistan). Nine participants were interviewed (5 Hindu and 4 Muslim) from the city of Vadodara. The semi-structured interviews focused on three areas:

i) "How would you describe your relations with people from other religious groups in your locality?";

ii) "How would you describe the Hindu-Muslim relations in your area?";

iii) "Do you have contact with them?" (people from other communities)(pp368-9).

Analysis of the interview transcripts produced a number of themes including:

- Prior to the violence of February 2002, relations between Hindus and Muslims were good ("We were like a family"; p370);
- Violence attributed to outsiders or those "less educated and unemployed" (p371);
- Unequal experiences of the violence; eg: "not a single store of Hindu was plundered, always Muslim shops were plundered" (p371);
- An uneasy calm between the communities with some individuals remaining friendly with the other community and others not. One Hindu participant said, "We would not like them (Muslims) to leave..", while another Hindu participant felt that many Hindus believe "they should be removed" (p373).

Shankar and Gerstein drew some conclusions for peace-building from their research:

a) Fear of the re-emergence of violence which can promote polarization of the communities as individuals move to religiously segregated neighbourhoods. This needs to be combated;

b) The participants believed that everyday contact (eg: celebrating each other's festivals) would improve trust and reduce conflict;

c) The participants felt responsible for peace in their neighbourhoods and welcomed the opportunity to work on community-building activities that promoted peace;

d) Concerns by participants that perpetrators of violence in 2002 evaded punishment. Thus a need for schemes to resolve this perceived injustice, like the Truth and Reconciliation Commission in South Africa. This granted amnesty to perpetrators of violence during apartheid who admitted their guilt and sought community forgiveness;

e) A practical solution is economic aid for poor neighbourhoods.

So "in divided society where violence appears to be intermittent or continuous with low-level hostilities... it would appear useful to implement multilevel interventions targeting economic, social, and political policies and structures" (Shankar and Gerstein 2007 p377).

ENDING CYCLES OF REVENGE

A small number of studies [16] have looked at the process of intergroup forgiveness for political violence, thereby attempting to stop the cycle of revenge and retribution.

Roe et al (1999), studying Belfast youths, noted the processes of revenge or not as:

i) Emotional reaction to the other's violence (eg: shock, anger);
ii) Desire for revenge;
iii) Those not acting, look for explanations;
iv) Recognising the need to let go and put events behind

[16] Eg; Special issue of Peace and Conflict: Journal of Peace Psychology, 13, 1, 2007. The American Psychological Association in 2002 had a symposium called "Intergroup Forgiveness in Settings of Ethnic Conflict" (Roe 2007).

them;
v) Forgiveness.

Often individuals stop after (iv), but it means that they are vulnerable to the desire for revenge if there is further violence. "In the forgiveness process, those who forgive must look beyond violent acts to the humanity they share with their victimizers and recognise the inherent equality between them" (Roe 2007 p4) [17].

But should forgiveness be irrelevant of the offender's behaviour? A unilateral perspective would say "yes". However, forgiveness is often seen as weakness allowing the offender "to get away with it". In the case of "negotiated forgiveness", "the victim attempts to understand the world of the offender, and the offender confesses, takes responsibility, and repents of the wrongdoing" (Roe 2007 pp4-5). Chapman (2007) found that those favour of forgiveness in South Africa placed conditions on the process.

In an age when revenge is often encouraged by individuals, societies, and governments, forgiveness can be viewed negatively. For example, Chapman (2007) found a "general lack of enthusiasm for forgiveness" in her study around the Truth and Reconciliation Commission in South Africa. Yet it can make "perfect sense" as a way of re-integrating offenders into the community for some (eg: Democratic Republic of Congo; Kadiangandu and Mullet 2007).

For societies emerging from periods of conflict, forgiveness is a complex process (Hamber 2007).

Forgiveness and re-integration are fine in theory, but there is the reality of the situation. Veale and Stavrou (2007) investigated the re-integration of ten child soldiers into Acholi society in northern Uganda. The teenagers (seven male, three female) had been abducted by the Lord's Resistance Army (LRA) and forced to fight. They had been returned for at least two years.

The respondents were asked about their abduction, integration into the LRA, and their return to their families. Focusing upon the re-integration, it was an ambivalent experience: "In the village, they treat me like a brother. But some people do not like seeing you. They call me rebel" ("Victor"; p286). The situation of rejection was often worse for young women, who had been sexually abused by men in the LRA, as village men do not

[17] I (Brewer 2006) proposed the idea of the "human being theory" to understand extreme violence. The point is that the perpetrators are human beings and there is an "internal logic" to their behaviour even if others cannot accept it. "However extreme the behaviour of individuals in terrorism, they are human beings doing it. It is more helpful in terms of understanding the psychology.. to ask how an ordinary human came to the point of blowing themselves up on an underground train" (p14).

want to marry them. On the positive side, some returnees were perceived as more confident and having leadership skills.

Veale and Stavrou felt that:

> Reintegration based solely on discourses of peace and forgiveness, without a mechanism for acknowledging identity transitions of returnees, especially for those who were members of the LRA for a long time, may leave them vulnerable to rejection and rerecruitment by armed groups" (p288).

Furthermore, the researchers pointed out that "acceptance and physical reintegration are not necessarily synonymous with reconciliation" (p289).

Rouhana (2004) believed that "genuine reconciliation" required justice, truth, historical responsibility, and "restructuring of social relationships".

PROMOTING WORLD PEACE

Crucial in the role of promoting world peace is the understanding of conflict in the world today. In this case, it is the issue of international terrorism that dominates. This includes the motives of the perpetrators, the reaction of the public, and the response of governments.

Perpetrators Of Terrorism

In the 21st century, a lot has been written about the perpetrators of terrorism applying different theories from psychology. In one example, Stroink (2007) applied the Social Identity Theory to understanding terrorism by second generation immigrants. "Bicultural individuals" (born in one country but heritage from another) are faced with a number of possible cultural identities, which can come into conflict. For example, an individual born in Britain whose grandparents came from Pakistan might be called "British Pakistani", "British Asian" or "British Muslim". The cultural identities available include "British" (as opposed as "European" or "American"), "Pakistani" or "Muslim". Depending upon which identity taken, it will influence how the individual interacts with mainstream society.

Stroink categorised three patterns of identification and the involvement in terrorism:

i) Ingroup identification

This is identifying with the mainstream culture. It

is assumed that such second generation immigrants will not commit acts of terrorism because they perceive themselves as "British". Stroink compares such terrorists to "domestic terrorists" who "perceive this culture to be flawed in certain ways, may seek to change the culture, first through conventional means such as protests, but then through more violent means that are believed to be faster and more effective" (p300).

ii) Outgroup identification

This is identifying with the minority group and not the mainstream culture. For example, in the case above, the individual has always seen themselves as "Pakistani" despite being born and raised in Britain. Such individuals are seen as marginalised by society and vulnerable to the influence of groups that promote violence. Such individuals "could feel lost, cast adrift on the sea of possible selves promised by the Western culture and disconnected from the version of the heritage culture portrayed by their immigrant parents" (p302).

Stroink (2005 quoted in Stroink 2007) found, in second generation immigrants in Canada, that "identity exclusivity" was also relevant. The belief that one identity excludes all other rather than that people can have more than one cultural identity. Furthermore, the belief that two cultural are incompatible.

iii) Transitional outgroup identity

Individuals who did identify with the mainstream culture but do not now. "This is the interesting paradox of having someone turn an ingroup into a hated outgroup" (p303). This process can occur for a number of reasons including discrimination.

In Canada, Stroink (2005 quoted in Stroink 2007) found that self-reported discrimination correlated with less identification with Canadian culture among "second generation biculturals of mixed heritage".

Stroink (2007) showed that individuals can have different types of cultural identity and become involved in terrorism. It is not necessarily because individuals have not integrated into mainstream society as is often portrayed by the media. But it must be remembered that the "vast majority of second-generation immigrants are well-adjusted and manage their cultural identities competently, showing no greater interest in violence than their monocultural peers" (p307).

Reaction of the Public

The response of the public to terrorist acts can be an increase in prejudice against the perceived group of the perpetrators, particularly in the case of international terrorism. This can be seen in the USA with the reaction towards "outsiders" after the terrorist attacks on September 11 2001.

Hitlan et al (2007) collected data on attitudes towards immigrants before September 11 2001 (sample 1), one month after (sample 2) and one year later (sample 3). All samples of 84, 140, and 180 respectively were from Texas. The research compared attitudes towards Arab immigrants (perceived group of the terrorists on September 11) and Mexican immigrants. There was no data collected on attitudes towards Arab immigrants from sample 1.

A number of conclusions from evident from the data (table 4):

- Perceived threat from immigrants was related to prejudice for both groups of immigrants in all samples. This included "symbolic threat" [18] (fear of loss of American culture through immigration) and "realistic threat" [19] (eg: immigrants competing with Americans for jobs);

- Arab immigrants perceived as greater symbolic threat than realistic threat after September 11. "Thus, Arab immigrants are perceived to represent a stronger threat to American culture and values compared to the belief that Arab immigrants are in competition with US citizens for more tangible economic resources" (p143);

- Mexican immigrants perceived more as realistic threat, and this increased after September 11;

- Higher levels of prejudice towards Arab than Mexican immigrants overall;

- Higher levels of prejudice and perceived threat of immigrants generally correlated with "American national identity" [20].

MEXICAN IMMIGRANTS ARAB IMMIGRANTS

- [18] Measured by the Symbolic Threat Scale (Stephan et al 1998); eg: "immigrants should learn to conform to the rules and norms of American society as soon as possible after they arrive".
- [19] Measured by the Realistic Threat Scale (Stephan et al 1998); eg: "immigrants should not receive social welfare intended for Americans".
- [20] Measured by eight items like "I enjoy being American" (Giles et al 1995).

	PREJUDICE	SYMBOLIC THREAT	REALISTIC THREAT	PREJUDICE	SYMBOLIC THREAT	REALISTIC THREAT
Sample:						
1	2.86	4.48	3.70	no data collected		
2	3.06	4.51	4.28	4.13	5.43	4.10
3	3.34	4.61	4.30	4.17	5.25	4.07

(After Hitlan et al 2007)

Table 4 - Means of attitudes towards Arab and Mexican immigrants.

It can be said that prejudice increased towards immigrant groups after September 11, but the type of perceived threat varied between symbolic threat from Arab immigrants and realistic threat from Mexican immigrants. Hitlan et al argued that understanding this difference is crucial when designing programmes to reduce prejudice. In other words, an awareness that different immigrant groups produce different responses from the mainstream culture.

Response of Governments

The major response of governments to international terrorism has been detention (often without trial). The most iconic image of this process is Guantanamo Bay.

Since late 2002, psychiatrists and psychologists have been involved at Guantanamo Bay as part of the Behavioural Science Consultation Team to make "interrogation more productive". Psychiatrists and psychologists prepare psychological profiles of detainees for use by interrogators, and observe the interrogations and give feedback to the interrogators (Bloche and Marks 2005). The profile can include tailoring stressors or rewards to individual detainees (eg: fears, beliefs). In other words, helping to find the vulnerabilities of individuals [21].

In August 2007, the American Psychological Association met to discuss the involvement of psychologists at such detention centres (Opotow 2007) [22].

Detention without trial (and subsequent torture) on terrorist suspects has increased with "the ascendance of a culture of security" which allows "internationally-proscribed, state-sponsored violations of human rights" (Opotow 2007):

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[21] Bloche and Marks (2005) reported the increasing examples of techniques used at Guantanamo Bay including sleep deprivation, painful body positions, feigned suffocation, and beatings.

[22] The Society for the Psychological Study of Social Issues (SPSSI) made members' statement (http://www.spssi.org/index.cfm?fuseaction=Page.ViewPage&PageID=484)

> Security now pervades everyday life in many ways for many people, including sporadic orange alerts, heavily armed national guards at airports and public transportation hubs, passport logjams, and visa denials and delays (Opotow 2007 p459).

The apparent growing acceptance of torture of such suspects in Western democracies, particularly the USA, has been aided by the opt-quoted "ticking time bomb" hypothetical scenario. A time bomb is hidden in a major city. A suspect in custody knows where the bomb is hidden, but they will not talk. Is torture acceptable to gain that knowledge to save lives? In other words, does the end justify the means? Opotow (2007) is worried about the "slippery ethical slope" of suing such a scenario to make torture acceptable: "The hypothetical, designed to lessen restraint and ease deviation from moral principles, deflects discussion about torture. It deftly shifts the topic from values and ethics to security and technicalities" (p459) [23].

REFERENCES

Adams, D (1991)(ed) The Seville Statement on Violence: Preparing the Ground for the Construction of Peace Paris: UNESCO

Adorno, T.W et al (1950) The Authoritarian Personality New York: Harper

Billig, M (2002) Henri Tajfel's "Cognitive aspects of prejudice" and the psychology of bigotry British Journal of Social Psychology 41, 171-188

Bloche, M.G & Marks, J.H (2004) Doctors and interrogators at Guantanamo Bay New England Journal of Medicine 7/7, 6-8

Blumberg, H.H (2007) Trends in peace psychology. In Blumberg, H.H; Hare, A.P & Costin, A (eds) Peace Psychology: A Comprehensive Introduction Cambridge: Cambridge University Press

Brewer, K (2003) An Introduction to Psychology of Terrorist and Suicide Terrorist Orsett, Essex: Orsett Psychological Services

Brewer, K (2006) The human being theory to

[23] Torture is a violation of the Universal Declaration of Human Rights (1948) (http://www.un.org/Overview/rights.html).

understand extreme behaviour Orsett Psychological Review 18, 11-17

Cairns, E & Lewis, C.A (2003) Empowering peace Psychologist March, 142-143

Cairns, E et al (1995) Psychology's contribution to understanding conflict in Northern Ireland Peace and Conflict: Journal of Peace Psychology 1, 131-148

Chapman, A.R (2007) Truth commissions and intergroup forgiveness: The case of South African Truth and Reconciliation Commission Peace and Conflict: Journal of Peace Psychology 13, 1, 51-69

Dixon, J (2007) Prejudice, conflict and conflict resolution. In Hollway, W et al (eds) Social Psychology Matters Maidenhead: Open University Press

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Hopkins, N & Kahani-Hopkins, V (2006) Minority theories of intergroup relations and intergroup contact: Conceptualising "Islamaphobia" and the opportunities for social change British Journal of Social Psychology 45, 245-264

Hunter, J.A et al (1991) Intergroup violence and intergroup attributions British Journal of Social Psychology 30, 261-266

Kadiangandu, J.K & Mullet, E (2007) Intergroup forgiveness: A Congolese perspective Peace and Conflict: Journal of Peace Psychology 13, 1, 37-49

Kelman, H.C (1997) Group processes in the resolution of international conflict: Experiences from the Israeli-Palestinian case American Psychologist 52, 3, 212-220

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Stroink, M.L (2007) Processes and preconditions underlying terrorism in second-generation immigrants Peace and Conflict: Journal of Peace Psychology 13, 3, 213-312

Tajfel, H & Turner, J.C (1986) The social identity theory of intergroup behaviour. In Worchel, S & Austin, W.G (eds) Psychology of Intergroup Relations Chicago: Nelson-Hall

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